

Understanding functions

Calc includes over 500 functions to help you analyze and reference data. Many of these functions are for use with numbers, but others are used with dates and times or even text. A function may be as simple as adding two numbers together or finding the average of a list of numbers, or it may be as complex as calculating the standard deviation of a sample or a hyperbolic tangent of a number.

Typically, the name of a function is an abbreviated description of what the function does. For instance, the FV function gives the future value of an investment, while BIN2HEX converts a binary number to a hexadecimal number. In Calc, functions can be entered either in upper, lower or mixed cases.

A few basic functions are somewhat similar to operators. Examples:

- + This operator adds two numbers together for a result. SUM() on the other hand adds groups of contiguous ranges of numbers together.
- * This operator multiplies two numbers together for a result. PRODUCT() does the same for multiplying that SUM() does for adding.

Each function has a number of arguments used in the calculations. These arguments may or may not have their own name. Your task is to enter the arguments needed to run the function. In some cases, the arguments have predefined choices, and you may need to refer to the text on the Function Wizard and the Functions deck, or the Help, to understand them. More often, however, an argument is a value that you enter manually, or one already entered in a cell or range of cells in the spreadsheet. In Calc, you can enter values from other cells by typing in their name or range, or—unlike the case in some spreadsheets—by selecting cells with the mouse. If the values in the cells change, then the result of the function is automatically updated.

Compatibility with other spreadsheet applications

For many functions, Calc follows the *OpenFormula* standard defined in Part 2 (Recalculated Formula (OpenFormula) Format) of the Open Document Format for Office Applications (OpenDocument) Version 1.2. This standard can be accessed at the OASIS website (<https://www.oasis-open.org/>) or the ISO website (<https://www.iso.org/standard/66375.html>). Calc's general support for *OpenFormula* leads to a level of inherent compatibility with the function set of any other spreadsheet application that follows the same standard. (There are some functions within Calc that are not in accordance with *OpenFormula* but many of these are included specifically to improve the exchange of files between Calc and Microsoft Excel.)

In order to improve interoperability, Calc is able to open spreadsheets created by many different applications and to save them in many different formats. In the case of Microsoft Office, it is extremely straightforward to exchange spreadsheet files between the two applications. When Calc opens a Microsoft Excel spreadsheet, it automatically takes steps to avoid incompatibilities that might otherwise be encountered with certain functions. For example, when Calc opens an Excel file that contains calls to Excel's CEILING function, these are automatically converted to reference Calc's CEILING.XCL function. Similarly when Calc saves a spreadsheet to Microsoft Excel format, it automatically takes steps to avoid potential incompatibilities. An example of this occurs when Calc saves a spreadsheet containing calls to its FLOOR function, as these are automatically converted to reference Excel's FLOOR.MATH function.

The Document Foundation's wiki provides a comparison of the features of LibreOffice and Microsoft Office, see https://wiki.documentfoundation.org/Feature_Comparison:_LibreOffice_-_Microsoft_Office. This comparison shows that Calc currently provides 508 discrete functions, with only 30 of those being unique to Calc, and the remainder having counterparts in Microsoft Excel. It is clear that there is a high level of commonality between the function sets of Calc and Excel, and many functions can be used in both applications with no change, thus increasing interoperability.